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Subject: End Results for May 20th -- Brooks McCall Subsurface Sampling
Date: 05/21/2010 06:35 AM
Attachments: [05_20_10 file 5 Dissolved oxygen synopsis.docx](#)
[05_20_10 file 2g stations.dbf](#)
[05_20_10 file 2f stations.prj](#)
[05_20_10 file 2e stations.sbn](#)
[05_20_10 file 2d stations.sbx](#)
[05_20_10 file 2c stations.shp](#)
[05_20_10 file 2b stations.shp.xml](#)
[05_20_10 file 2a stations.shx](#)
[05_20_10 file 7 CTD Summary.ppt](#)
[05_20_10 file 6 LISST.doc](#)
[05_20_10 file 4 C3 Fluorometer Report.pdf](#)
[05_20_10 file 3 sampling.pdf](#)
[05_20_10 file 1 Cruise 3 Sampling Tracking Master.xls](#)
[05_20_10 file 8 Sample Inventory.doc](#)

End of Day Status Report, Brooks McCall, May 20.

- The rationale for today's sampling sequence was based on the hypothesis that the resumption in dispersant injection (ca. midnight May 18/19) would result in a new plume of dispersed oil at depth. We concluded that, based on fluorometry depth profiles, yesterday's samples probably tracked the remnants of the previous plume which moved in a southwesterly direction away from the spill site. Data gathered during the previous cruise indicated a vertical 'thinning' of that plume from between 1000-1400m to a narrower band between 1000-1100m.
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- Yesterday's fluorescence measurements appeared to indicate that this trend was continuing. We detected a small fluorescence signal on the SW transect at respectively 8Km and 12Km from the spill site and an increase in fluorescence on a 150 arc NE of the 12Km station. No fluorescence was present at the station occupied SE of the transect.
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- In an attempt to pick up a new plume, today's sampling stations were closer to the spill site than yesterday. Modeling predictions and our own calculations indicated the probability of picking up a new plume on the SW transect at 4Km from the spill site. This was the first sampling station (B34) occupied at 0700. Contrary to expectations, only a small fluorescence signal was detected below 1100m. Subsequent samples were taken from the 1.7Km site (B35) and indicated a very small fluorescence trace. A third sample (B36) was taken due SW of the spill site at a distance of 1.5Km from the source showed a fluorescence signal between 1100 and 1300m in depth, although this was much smaller than the signal detected at this site on 5/15 (B20) and 5/16 (B21).
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- To further characterize this signal we opted to move to a point 1.5Km due south of the spill site. Data at this fourth station (B37) showed no apparent fluorescence signal at any depth. Station specific information on samples is shown in attachment 1. As before, this spreadsheet only contains information from the current cruise, although attachments 2 and 3 include sites visited on previous cruises, but with sampling station from this cruise (3) highlighted. CTD data from this cruise are summarized in attachment 4.
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As samples from B37 were being retrieved and processed, at appx. 1615h we received a request to cease operations and prepare to return to Port Fourchon in order to resupply and proceed with the installation of 'real time' STD deployment/data retrieval capability. Following some stowage of samples and equipment we received a directive that reversed the original request at appx. 1730h. The new directive indicated that the vessel remained on station.

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- En route between the 4Km and 1.7Km marks along the SW transect and (between B34 and B35) we towed the Turner C3 Towfish Fluorometer at 2 knots. A second tow was made between stations B36 and B37, and a further tow of this instrument was initiated following the decision to remain on site instead of returning to port (at completion of samples from B37 1.5Km due south of the spill site. This tow (2 knots) followed a circular path around the spill site at a radius of 1.5Km. The instrument appeared to be performing satisfactorily, although some episodes of apparent fouling by oil were apparent. Data from these tows are summarized in attachment 5.
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- In view of contradictory data from oxygen analysis employing the LaMotte 5860 Field Kit we initiated a field cross-calibration exercise employing new La Motte kits. Along with routine analyses from the CTD and the Extech DO700 hand-held probe, three scientific crew members each made independent colorimetric analyses of three pairs of samples from different sampling stations. Results from this exercise are presented in attachment 6. A summary of particulate analyses (LISST) is shown in attachment 7.
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- Although the low incidence of fluorescence in today's samples provided only limited opportunity for comparison between LISST data and fluorometry, as in the previous cruise there was generally good correlation between LISST data and fluorometry, particularly with reference to site B36, last visited as B26 on 5/17. Culture of organisms (rotifers) for bioassays continued and counts made from a trial run initiated yesterday (see End of Day Status Report 5/19). Survival of lab controls was insufficient for the data to be acceptable, although, as survivors from the last cruise, the organisms were now five days old and well beyond the recommended specimen age for this assay.
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- Hatching began from cysts cultured yesterday and sufficient were available for a limited assay using samples from B36 the only station showing significant fluorescence. In light of much more favorable weather conditions than for the last cruise we are attempting a full six replicated dilution series for samples B36D (300m, no noticeable fluorescence) and B36J (1300m, fluorescence peak). No results are available yet.
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- A brief inventory of equipment and supplies is shown as attachment 8. I can offer the following tentative conclusions from today's data, although other interpretation may be possible. Taken with yesterday's data from 12Km and 8Km along the SW transect, movement towards the spill site along this transect resulted in a diminished fluorescence signal that could represent the remnants of the deep water plume initiated by the previous dispersant injection episode. Attempts to pick up a new plume resulting from more recent injection indicated a much weaker fluorescence signal at depth than might have been expected.

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- Only one site (B36) 1.5 Km SW of the spill source showed a substantial fluorescence signature below 1100m, although this was much weaker than when the station was last visited on 5/17. This could indicate a change in direction or speed of the deep water plume or a decrease in oil flow due to more effective oil retrieval at the spill site.

Summary of Attachments

1. An Excel spreadsheet with six tabs, containing station specific information on samples.
2. A shape file of our station locations which can be imported to mapping software.
3. A pdf graphic based on the shape file showing our stations.
4. A summary of data from Turner C3 towed fluorometer deployment.
5. Results of cross-calibration exercise for Motte colorimetric dissolved oxygen analysis.
6. A summary of the LISST results.
7. CTD plots for today's stations.
8. Equipment and inventory status.



David Wright PhD DSc
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Faithfully yours
Steve

"Frequently, my thoughts get bored and walk
down to my mouth. Often, this is a bad thing."

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